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ANNUAL REPORT

—OF THE—

BOARD OF

SHEEP COMMISSIONERS

—OF—

MONTANA

1909—1910

T. C. POWER, PRESIDENT
HELENA, MONT.

A. C. LOGAN, VICE-PRES.
BILLINGS, MONT.

GEO. J. JOYCE, SECRETARY
HELENA, MONT.

DR. M. E. KNOWLES,
STATE VETERINARIAN

EMIL STARZ,
CHEMIST AND BACTERIOLOGIST

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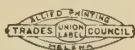
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ANNUAL REPORT

Board of Sheep Commissioners of Montana

1909-1910

To His Excellency, Governor Edwin L. Norris:

As required under the law, we submit herewith for your consideration our biennial report for the years 1909 and 1910, supplementing our report heretofore made for the year 1909.

At the regular annual meeting of the Board, held for the purpose of organization, the following officers were selected for the term ending February 28, 1911:

T. C. Power, Helena, Montana, President;

A. C. Logan, Billings, Montana, Vice President;

Geo. J. Joyce, Helena, Montana, Secretary.

The personnel of the Board consists as heretofore of one member from each county, and the President and Secretary. Lincoln and Sanders counties have no representatives on the Board, partly owing to the fact that in these counties the necessity for a commissioner does not exist, Lincoln county having no sheep and Sanders county less than a dozen, as shown by the assessors' returns from these counties.

This commission, by and with the advice of Dr. M. E. Knowles, our able State Veterinarian, and with the intelligent co-operation of a large majority of the sheepmen of the State, has rid the State of that dread plague of all sheepmen "scab", and at the date of this report no known cases of scab or scabbies exists within the boundaries of Montana. The State has reached almost perfection in its sanitary measures regarding sheep, brought about by the constant and intelligent supervision of the State Veterinarian and his Inspectors.

The greatest danger of an outbreak of scab comes from the careless handling of imported rams and sheep, and great care must be exercised in the proper inspection, treatment and quarantining of such bands as are imported. It would seem at times that the efforts made by this Commission, and the rules adopted for the prevention of disease among sheep, have been too rigorous and exacting, and at times have seemed to work a hardship upon importers,

but the test of time has proved that the action of the Commission, through the State Veterinarian and its Inspectors, has turned out to the ultimate good of all concerned in the industry, and today Montana stands unrivaled in its sanitary conditions as regards sheep.

FINANCIAL REPORT.

Balance on hand as per last report, December 1, 1908.....	\$ 5,962.84
Appropriation for two years, ending February 28, 1911.....	20,000.00
Received by inspectors for inspecting importations.....	973.50
Back taxes.....	31.27

TOTAL REVENUE.....	\$26,967.61
Total expense, December 1, 1908, to December 1, 1910.....	15,797.95

Balance as per treasurer's books, Dec. 1, 1910.....	\$11,169.66
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Details Expenses, December 1, 1908, to March 1,
1910 —

Legal expense.....	\$ 228.00
Commission expenses, attending meetings, etc.....	580.98
Salaries inspectors, regular.....	3,775.00
Inspection and treatment and special inspectors, traveling, hotel and other expenses.....	3,974.27
Office rent	100.00
Telephone	18.00
Printing 1907-1909 report.....	207.00
Printing, postage, etc., and advertising, reports, etc.	323.56
Secretary's salary 18 months.....	1,125.00
	<hr/>
	\$10,331.81

Details expense, March 1, 1910, to December 1,
1910, Date of the Report—

Legal expense.....	\$1,186.05
Commission expense.....	.00
Salary inspectors (2).....	2,000.00
Paid special inspectors, inspection and treatment, traveling, hotel and general expenses.....	1,544.60
Rent	75.00
Phone and telegraph.....	43.97
Postage, etc.....	16.52
Secretary's salary, eight months.....	600.00—
	5,466.14

Total for 24 months.....	\$15,797.95
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The outstanding approved claims against this Commission are as follows:

Due inspectors for work performed in October and November, unpaid	\$ 640.60
Salaries, inspectors	700.00
Salary of secretary	150.00
Postage, etc.....	31.74
Due for mileage books.....	150.00
	<hr/>
Total approved claims.....	\$ 1,672.34
Unapproved claims for legal services in case of McAllister v. M. E. Knowles and Glen Parker.....	600.00
	<hr/>
	\$ 2,272.34
Balance on hand as reported by treasurer, Dec. 1, 1910.....	\$11,669.66
Less claims as above, if allowed.....	2,272.34
	<hr/>
	\$ 9,397.32
The expenditures of this department were for the year 1907....	\$ 9,976.54
For the year 1908.....	10,493.66
	<hr/>
A total for the two years of.....	\$20,470.20
The expenditures of this department for the same period, 1908-1910, were.....	\$15,997.95
Outstanding claims approved.....	1,672.24
Unapproved	600.00
	<hr/>
A total possible expense of.....	18,070.29
	<hr/>
A saving of.....	\$ 2,399.91

And this in spite of the fact that the Commission incurred an added expense of some \$1,864.05 in defending the damage suits brought by one Charles McAllister v. Dr. M. E. Knowles and Inspector Glen W. Parker for damages arising from the dipping of foreign sheep at Big Timber, Montana, under the direction of this Board in 1905 and 1906.

The Board in this matter has paid, through the President of the Board, up to date, the witness fees in the suit, and one bill of F. H. Hathhorn of Billings, to the amount of \$300.00, as attorney fees in the two actions, and there is still pending in the matter of these suits attorneys fees aggregating \$600.00 awaiting the action of the full Board.

For your information we would say that judgments aggregating about

\$1,000.00 have been obtained against Charles McAllister for costs in this action, and said judgments have been filed as liens against the property of the said McAllister, and in due course of time all moneys so collected on the judgment will revert to the funds of this Commission. While upon its face this expenditure might seem excessive, we beg to say that every item of the expense of this legal matter has been given the most careful scrutiny and no expenditures approved and paid except under orders of the Court and the Board of Examiners of the State.

While these suits have in a certain degree been costly, they were not of our invoking or seeking, and as both Dr. Knowles and Inspector Glenn Parker were merely the acting agents of the Board, as found by the court, it was up to this Commission to defend the action, which it did successfully, and fully established the fact that the official acts of this Board, the laws of the State in reference to sanitary matters as effecting the sheep industry, are constitutional; right and just, and made for the protection of the industry, as a whole, and not for any special individual. The trial, and the result of these cases, has proved beyond a doubt that when acting within the laws (which is very plain), and upon orders of this Board, the officials, who, in their official capacity are part and parcel of the Sheep Commission, they have nothing to fear. It is to be hoped that our victory in these suits will serve as a warning to others, that the sanitary laws of Montana must be lived up to.

The number of sheep in the various counties in the state, as reported by county assessors, are as follows:

	1909	1910
Beaverhead	161,186	169,692
Broadwater	52,591	46,782
Carbon	148,123	181,334
Cascade	114,206	155,836
Chouteau	578,296	775,010
Custer	511,778	435,953
Dawson	320,012	341,175
Deer Lodge	2,840	5,302
Fergus	472,985	464,432
Flathead	406	405
Gallatin	36,038	33,750
Granite	8,471	13,683
Jefferson	14,070	6,124
Lewis and Clark	120,282	149,215
Lincoln	0	0
Madison	112,384	118,737
Meagher	241,578	233,758
Missoula	2,308	2,512
Park	94,591	103,700
Powell	63,901	71,127

	1909	1910
Ravalli	21,051	20,059
Rosebud	307,541	316,762
Sanders	8	19
Silver Bow.....	6,770	8,540
Sweet Grass	288,902	302,467
Teton	265,171	261,264
Valley	190,214	226,536
Yellowstone	350,382	333,318
	<hr/> 4,486,085	<hr/> 4,817,492

It will be seen from the foregoing table that the number of sheep assessed for 1910 exceeds the 1909 assessment by 331,407, and a like comparison shows that the number of sheep reported by assessors as on hand March 1, 1910, exceeds the number of sheep assessed March 1, 1908, by 643,604, a gain of over 15%, a very healthy increase, and goes to show that the sheep industry of the state is keeping pace with all other industries, and that Montana still maintains her supremacy as the banner sheep and wool state of the nation, in spite of adverse claims made by some of our sister states. While the assessors' returns for 1909 show but 4,486,085, a conservative estimate of the actual number of sheep in Montana shows the number to be about 5,600,000, and that the number of pounds of wool produced in Montana in 1909 was about 43,000,000 pounds. This is borne out by the fact that in the year 1909 railroad reports show that the total shipment of wool during the season of 1909 aggregated 45,549,636 pounds.

In 1910 a conservative estimate of the number of sheep in the state was about 6,000,000, although the assessors' returns show but 4,817,492, and the estimated amount of wool produced was about 43,000,000 pounds.

These estimates are based upon average returns from sheep owners in the different counties, and from men who are in a position to know the actual facts, and from personal observation we know that assessors' returns do not show the actual number of sheep in the State, owing possibly to the fact that the lamb crop and scattered and missing bands can never be taken by the assessor.

The average price of wool in 1909 was about twenty cents per pound, and in 1910 about eighteen cents.

Taken all in all the wool industry of Montana is at present in a very prosperous condition, but with the increased cost of feed, labor, lands, etc., and the continued agitation in regard to tariff, legislation, the closing out of large holdings of lands, and their diversion among the large number of immigrants from other states, will doubtless cause a large movement in the disposal of large holdings of sheep and will probably result in a falling off in the number of sheep in this state during the next year or two, until there is a definite settlement of matters that affect the industry.

The Board still holds to the sanitary measures adopted by it in recent

years, and finds that regulations now in force concerning sanitary measures and regulations have met with universal success.

The following regulation adopted by the Board in 1908 not proving to the best interests of all concerned has been abrogated:

“Hereafter when any sheep are shipped into this state for purposes of feeding, from clean districts accompanied by a federal inspector’s certificate to the effect that said sheep were shipped from a clean district and were free from all infectious and contagious disease, that they be dipped once and then be kept in quarantine in close feed lots for five (5) months subject from time to time to such competent inspection as was deemed necessary by this Board or the State Veterinarian, and subject to final thorough inspection at the end of that period, and if found clean at said final inspection can be released without further dipping and furnished with a certificate to that effect.

“If said sheep are to be released from said quarantine at any time prior to the expiration of said five (5) months period they must be dipped the second time before being permitted to go on the range.

“All expense covering the inspection and treatment of this class of shipments must be borne by the owners thereof.”

We are of the opinion that an appropriation of \$20,000.00 for the two years ending February 28, 1913, will be ample for the expenses of carrying out the provisions of the act creating this Board, providing that due care is exercised in the expenditure of any fund thus created, and providing further that due provision is made for payment of the transportation expenses of the inspectors of this Board.

Heretofore inspectors have been provided with free transportation by the different railways in the state, but under the decision of the supreme court doing away with free transportation to state officials, etc., it will be necessary that means be provided to furnish transportation to the inspectors of this department. A conservative estimate of the amount that will be required to furnish transportation to the inspectors of this department will be not over \$2,500.00 per year.

The report of the State Veterinarian to this Board, covering the work done by his department in connection with the Board of Sheep Commissioners is hereby appended and referred to as supplemental to and part of this report, and his recommendation fully concurred in.

Respectfully submitted,

STATE BOARD OF SHEEP COMMISSIONERS,

By GEO. J. JOYCE,
Secretary.

Helena, Montana, November 30, 1910.

To the Honorable Sheep Commission of the State of Montana:

Gentlemen:—It is gratifying indeed to report that there is not a single case of scab within our entire boundaries, nor is there a case of exposure to this disease. The only quarantine existing during the year against scab were in Gallatin, Park, Rosebud and Sweet Grass counties, where scab appeared during the past winter. These sheep are now entirely clean and all restrictions on them have been removed.

Lip and Leg Ulceration is the problem now confronting wool growers of our state, but this is one for the individual sheep man to handle himself. The directions pointed out by this department for the control of this disease have proven unqualifiedly successful in the hands of those who have intelligently and industriously carried them out; even the venereal form, which is apparently the most formidable; has been, and is being successfully cured by the intelligent application of the nitric acid treatment.

Unfortunately there is at the present time no known positive method of prevention. The prophylaxis of this disease is being studied by the Federal Bureau of Animal Industry and this department. It is hoped we may be able within the next year to give some intelligent direction, that will in a measure at least, offer some protection against infection.

The value of universal dipping of sheep has been proven a multitude of times. I strongly recommend that this Board issue a general dipping order applying to all sheep, to be accomplished between June 20 and October 1. A careful intelligent dipping of sheep unquestionably improves general health, increases production of wool, and is a sanitary measure of undoubted value. The prevalence of ticks and lice among Montana sheep is well known to all wool growers. The presence of these parasites is productive of unthriftiness and it is not at all improbable that they may become carriers of disease that can only prove disastrous to the sheep industry. A general dipping order religiously enforced would rid us of this menace and prove a most profitable investment.

During 1909 and 1910 several outbreaks of lung worm disease were discovered in various counties. One investigation disclosed nodular disease among a shipment of sheep imported from Missouri. The existence of a number of internal parasitic diseases of sheep makes it imperative that this commission should during the next two years devote all time and funds possible to their investigation and eradication.

Necessarily from now on wool growing in this state must be maintained under supervision of agriculturists, and of necessity the numbers in possession of each individual will be materially diminished. The sheep industry conducted as heretofore in bands of from fifteen hundred to five thousand will diminish to flocks of from two hundred to possibly one thousand, the aggregate augmenting, and under restricted conditions, opportunities for dissemination of disease; particularly the prevalence of internal parasitic diseases will be greatly enhanced; these are the pests with which the sheep men will have to contend in the future.

Gid among sheep, particularly lambs and yearlings, is slowly on the increase, and is a matter that should receive earnest attention from individual owners. All carcasses of sheep dying on the open range; or in enclosures, should be burned, or buried so deeply that it will be impossible for dogs, wolves and coyotes to disinter them; in addition to which, all wool growers should twice annually treat their dogs for tape worm, as was advised in your report for the year 1897. An order should issue to this effect.

Tape worm disease was exceedingly plentiful during the winter of 1909-10; being the occasion of severe loss in a number of bands of yearlings in various localities. In the majority of instances losses were curtailed by the individual owner feeding crushed feed, to which was added powdered tobacco, salt and charcoal.

It is imperative, since we now have our state free from scab, that the vigilance heretofore maintained be continued and that your regulations be as carefully observed as they have been in the past, which will undoubtedly insure us against reinfection.

I recommend that an order issue from the commission permitting the quarantine under fence without dipping, all foreign sheep imported from localities declared free from scab by the federal authorities; providing such sheep are shipped in disinfected cars and not allowed to unload into public yards en-route; if in the judgment of the State Veterinarian or inspector in each individual case such expedient is safe.

Our inspectors are entitled to unqualified praise for the very efficient service rendered the state and have undoubtedly proven the value of wide experience in sanitary service.

Attorney General Galen has been of inestimable value to the commission and my department in defending litigation and in prosecutions, having obtained in every case a judgment in our favor. This has entailed upon the Attorney General's department much difficult work that has been most cheerfully and willingly accomplished. I therefore take this public means of thanking him.

A liberal appropriation should be secured by your honorable board for the purpose of maintaining sanitary regulations and particularly for the purpose of studying internal parasitic diseases that are now menacing our general sheep industry.

The subjoined tables show the amount of work accomplished by this department during the past two years. There is no doubt; Lip and Leg Ulceration with intelligent handling by a majority of the sheepmen of our state, is on the decrease. The limited number of importations during the past year is patent indication of rapidly disappearing range conditions and surely heralds the onward march of the farmer.

Respectfully submitted,

M. E. KNOWLES.

REPORT OF THE VARIOUS SHEEP INSPECTORS TO THE STATE VETERINARIAN, 1909.

COUNTY	Native Sheep Dipped and Quarantined Account of Exposue to Scab				Imported Sheep, Dipped and Quarantined	
	Scabby	Exposed	Bucks	Mixed	Bucks	Mixed
Beaverhead						9,534
Carbon					471	18,573
Chouteau					450	42,398
Custer					212	15,665
Crow Ind. Res.						13,150
Fergus		32,500		32,500	151	
Rosebud	36,271	19,430	516	55,185	45	33,495
Sweet Grass.....					270	7,820
Teton					62	
Valley					101	
Yellowstone		750		750	1,309	22,192
TOTAL	36,271	52,680	516	88,435	3,071	162,827

COUNTY	Sheep Examined during year Free from Disease		Public Buck Herds	Examined for Lip and Leg Ulceration	Treated for Lip and Leg Ulceration	Veneral Form Lip & Leg Ulceration
	Bucks	Mixed	Bucks			
Carbon		24,000	501			
Chouteau		31,117	2,798	7,500		
Custer	398	180,965	5,497	239,581	218,617	3,611
Dawson		58,205	5,140	46,884	500	
Fergus	15,000	190,138		201,438	19,850	
Gallatin		5,528				
Lewis and Clark....			368			
Meagher			932			
Park	403	40,465	408			
Rosebud	730	108,974	1,122	13,939	7,800	
Sweet Grass.....		98,950	374	12,000	12,000	
Teton			2,998		5,000	
Valley		116,611				
Yellowstone		126,307	958	7,551	3,835	
TOTAL	17,228	581,260	21,096	528,893	267,602	3,611

Number of Public Buck Herds permits issued, 31.

Number cars disinfected during year, 500.

RECAPITULATION.

Native sheep dipped and quarantined account of scab or exposure..	88,951
Imported sheep dipped and quarantined.....	165,898
Total number of sheep inspected, Lip and Leg Ulceration.....	528,893
Total number sheep inspected during year free from disease.....	898,488
Grand total sheep handled, 1909.....	1,682,230

REPORT OF THE VARIOUS SHEEP INSPECTORS TO THE STATE VETERINARIAN, 1910.

COUNTY	Native Sheep Dipped and Quarantined on Account of Scab or Exposure to Scab				Imported Sheep Dipped and Quarantined	
	Scabby	Exposed	Bucks	Mixed	Bucks	Mixed
Beaverhead .....	.....	.....	.....	.....	460	5,782
Carbon .....	.....	1	1	.....	100	.....
Cascade .....	.....	.....	.....	.....	225	.....
Choteau .....	.....	.....	.....	.....	278	.....
Custer .....	.....	.....	.....	.....	63	10,336
Flathead .....	.....	.....	.....	.....	287	.....
Gallatin	2,168	.....	.....	2,168	42	.....
Madison .....	.....	.....	.....	.....	38	.....
Park	1,528	.....	518	1,010	.....	.....
Rosebud	23,151	.....	.....	23,151	.....	.....
Sweet Grass.....	.....	.....	.....	.....	50	.....
Yellowstone .....	.....	.....	.....	.....	600	.....
	26,847	1	519	26,329	2,143	16,118

COUNTY	Sheep examined during year free from disease		Public Buck Herds	Examined for Lip and Leg Ulceration	Treated for Lip and Leg Ulceration	Veneral Form Leg and Lip Ulceration
	Bucks	Mixed	Bucks			
Beaverhead	132	12,474	.....	.....	.....	.....
Carbon .....	.....	7,538	452	.....	.....	.....
Cascade	95	38,668	730	20,000	20,000	.....
Chouteau	3,939	194,539	4,422	55,800	13,806	.....
Custer	1,820	18,759	4,709	18,089	.....	1,185
Dawson	1,119	615	4,315	.....	.....	.....
Fergus .....	.....	50,800	.....	63,980	22,350	.....
Gallatin	115	6,364	.....	5	5	.....
Madison .....	.....	.....	467	23,000	500	.....
Meagher	500	28,000	.....	164,500	11,800	652
Park	1,393	80,218	849	.....	.....	.....
Rosebud	220	93,410	.....	5,500	.....	.....
Sweet Grass	30	49,742	1,098	10,741	.....	.....
Teton	1,579	6,422	1,563	.....	.....	.....
Valley	3,235	22,915	392	6,000	.....	.....
Yellowstone	822	70,666	911	900	.....	.....
	114,999	681,130	19,908	368,515	68,461	1,837

Number Public Buck Herd permits issued, 31.

Numbers cars disinfected during year, 1,014.

RECAPITULATION.

Native sheep dipped and quarantined account of exposure.....	26,848
Imported sheep dipped and quarantined.....	18,261
Total number sheep inspected for Lip and Leg Ulceration.....	368,515
Total number of sheep inspected during year free from disease....	696,129
	<hr/>
	\$1,109,753

Helena, Mont., December 15, 1910.

To the Honorable Sheep Commission:

Numberless inquiries come to this Department in regard to a disease among lambs and yearlings commonly called *Gid*.

I beg therefore on this account to submit the following description of this disease for the benefit of our sheep men, expressing the hope that they will follow the suggestions given to at least aid in the repression of this disease.

Respectfully submitted,

M. E. KNOWLES,

State Veterinarian.

GID, OR STAGGERS.

Taenia Coenurus, (*Kuch*).

The disease which is popularly known as *gid*, *sturdy*, *staggers*, or *turnsic* in sheep, is caused by the presence of a parasite living in the brain. This parasite is closely related to *Taenia marginata*. It lives in about the same way, but differs from it in detail. It is known as *Taenia coenurus* in its adult state, and as *Coenurus cerebralis* in its cystic state—the stage in which it infects sheep.

Method of Infection.—Sheep become infected with this dangerous parasite while pasturing or drinking where dogs have scattered the eggs in their wanderings through the country. In the West the eggs may also be scattered by wolves, coyotes, and foxes, which may harbor the adult parasite.

Life History.—The eggs of *Taenia coenurus*, after being taken with the food or drink, are hatched within the stomach of the sheep, and make their way through its walls. They then migrate either actively, by forcing their way through the connective tissues, or passively, as is generally believed to be the case, by getting into the circulatory system, and are carried from thence into various portions of the body. Those arriving in the spinal canal and cranial cavity seem to thrive and grow, while the others, which may have reached the heart, lungs, and diaphragm grow for a time and then perish.

Description of Cystic Stage.—Having arrived in the brain cavity, the young embryo migrates upon the surface of the brain much as the embryo of *Taenia marginata* does through the liver substance. The galleries it makes are sinuous. They begin at a point and slowly increase with the growth of

the parasite and run in any direction. In from two to three months after the first invasion of the brain the cysts have grown as large as a hazel nut, or about a half-inch in diameter. When examined closely they will be found encased in a thick outer skin, a sac made by the membranes of the brain. Out of these sacs the parasites may be loosened, and these resemble the cystic of *Taenia marginata*. It differs, however, in a very important particular—instead of having a single knob attached, tens of hundreds of these knobs may be seen as little dots hanging from the inner surface into the fluid of the cavity. Each of these dots can evert itself, or push its head out, and will then be seen by the aid of a glass to be a perfectly developed head having four suckers and a crown of about twenty-eight hooks. These heads, when the cysts are fed to dogs, may develop into as many individuals. Most of them will generally die, and only a few of the stronger will develop. Instead of the single worm which the embryo of the *Taenia Marginata* produces, this peculiar species develops many from each of its embryos. In this there is a compensation; for while many of the *Taenia marginata* embryos come to maturity, but one or two of the coenuri survive, and thus the opportunities for the further perpetuation of the species are diminished.

Duration of Development.—Experiments have shown that the embryo may be found in the brain from two to three weeks after feeding, and is then about the size of a mustard seed. Between three and six weeks after feeding, the worst symptoms of the disease occur. The coenurus becomes developed in from two to three months. After this time it continues to grow in size and in the number of heads from six to eight months, when it usually causes the destruction of the affected sheep. When the developed coenurus is fed to a dog, it usually produces adult tape-worms within a month.

In the migrations of these parasites many are lost and destroyed. Of the hundreds of eggs which leave the intestines of dogs, few reach the stomach of the sheep, and of these still fewer enter the cranium. Of the few which become adult—one or two in each sheep affected—but a small percentage nowadays arrive in the dog again. Thus of the thousands of embryos that left the dog, but a single coenurus may return. But this coenurus, developing again into several tape-worms, is the source of many new embryos for the re-infection of the sheep.

Disease.—Lambs and yearling sheep seem to be the most liable to infection; those over two years old seem to possess a degree of immunity. Sheep herded by dogs; those breeds which eat the grass close to the ground; sheep which drink out of ponds or brooks in which the dogs bathe; flocks belonging to careless flock-masters, who leave the skulls and viscera of slaughtered and dead sheep strewn through the pastures, are more liable than others. In short, any of the conditions which help the distribution of the parasites, render sheep more subject to the disease.

Symptoms and Progress.—The symptoms of gid in sheep are dependent upon the stage of invasion and development at which the parasite has arrived. The invasion embraces the period from the time that the embryos have been

swallowed to the time that they become partially developed in the brain. The stage of invasion generally passes unnoticed. Between the second and third week those animals worst infected—for but few of those infected show signs of disease in this stage—show symptoms of inflammation of the brain and surrounding tissues. It is at this period that the little parasites are active in progressing through the tissues. Dullness, feebleness, heat in the head, intense redness of the mucous membrane of the eyes, and increased puls-beat are characteristic of this stage. The head is generally held in a peculiar position, either stretched at length, turned backward, inclined to either side, or drooped. The intensity of these symptoms depends upon the number of invading parasites. Later, spasmodic convulsions or paralysis may occur. Death may take place in about six or eight days after the first symptoms are noticed. The diagnosis at this stage is difficult, but depends on finding the parasites and their channels on the surface of the brain. The former are at this time of the size of a mustard or flax-seed. A correct diagnosis at this stage will influence the future treatment of the flocks. If the sheep live through this stage, no further symptoms will be noticed for from four to six months, when a new set of symptoms will appear. It is said that of all infected sheep, less than two per cent of those which show the disease in the early stage, recover.

The symptoms of the second stage arise from two causes—from the irritation produced by the little heads thrust out of the mother bladder, and from the disturbances created by the pressure caused by the increase in size of the coenurus.

The actions from which the disease has derived its common name in all countries are especially characteristic. The head turns; the animal walks in a circle; it staggers, trembles, has convulsions, acts stupid; it becomes unable to eat or drink, and finally dies of exhaustion or paralysis. The various gaits and peculiar positions assumed by the infected animals arise from the particular location of the parasite. The length of time between the attack and death also depends on this position, some parts of the brain being more vital than others. Death occurs within a month or a month and a half after the secondary symptoms appear.

A diagnosis of the disease in this stage can be determined by an examination of the infected animal. Sometimes at this stage the parasite softens the wall of the skull by its continued pressure and the spot can be felt with the fingers. Coenuri in the spinal canal are more difficult to diagnose. They cause the sheep to stagger and walk peculiarly with the posterior extremities. Sometimes the disease is manifested by an intense itching along the backbone, without any apparent reason. Paralysis of the hind limbs and of the rectum and bladder often result.

The gid should not be confounded with the disease caused by grubs in the nasal cavities, which sometimes produce similar symptoms. The false gid produced by the larvae of the *Estrus ovis* will cause more symptoms of a catarrh or cold in the head, and less of the turning, which is so very characteristic of true gid.

Treatment.—There is no treatment that can be profitably followed for sheep thus affected. A veterinarian could, in the more advanced cases, locate the position of the cyst either by inference from the character of the symptoms or by feeling the softened spot in the cranium. He might, by carefully cutting away, or trephining the skull over the point, remove the parasite and enable the sheep to recover. The intelligent farmer might learn to do this himself, but after it is all done, the cost of doing it will about equal the value of the sheep saved. The true treatment, and that which has saved France and Germany more than any medical or surgical treatment devised, consists in prevention.

Prevention lies in the treatment of the sheep and of the dogs. As the developed coenurus comes only from the cranium or spinal canal, it is very easy to prevent dogs from being infected by taking care that they cannot get these portions of the carcass, either when the sheep are slaughtered, or after they have died in the pasture or sheep-cote. The heads should either be rendered, burned, or deeply buried, and not thrown into the first convenient corner.

When the skulls and viscera must be fed to dogs, they should be subjected to a prolonged boiling. The soup so made would be harmless. When the lambs are known to have passed through the first stage of the disease and are fat enough for sale, at the very beginning of the secondary symptoms they should be slaughtered and marketed, care being taken with the first killed to verify the diagnosis. This will save more than any other proceeding.

All sheep men should at least twice annually, treat all dogs in the following manner:

First—Dogs should be confined so that all discharge may be collected and burned after treatment; should then be starved for twenty-four hours; then administer from one to two drams of powdered areca nut; two hours subsequently administering from one to two ounces of castor oil. After the oil has thoroughly operated, collect all the discharge and burn. Again repeat the treatment in not less than six months.

At the regular annual meeting of the Board, held Wednesday, December 28, 1910, at Helena, Mont., the following commissioners were present:

N. B. Smith, Meagher county; Louis Fehlberg, Flathead; R. F. Clary, Cascade; F. D. O'Neill, Custer; E. J. Stanley, Jefferson; Wm. Lindsay, Dawson; A. K. Prescott, Lewis and Clark; J. M. Darroch, Park; Albert May, Ravalli; A. S. Lohman, Chouteau; the President, T. C. Power, and Geo. J. Joyce, Secretary.

The Secretary's report was read and upon motion approved. A finance committee was appointed to audit the financial report which was found correct.

The committee to whom was referred the report of Dr. M. E. Knowles, state veterinarian, submitted the following report which was duly accepted and ratified as the action of this Board and ordered printed in the annual report:

To the Honorable Sheep Commission:

Your committee on the State Veterinarian's report beg to advise that we have carefully gone over the same and make the following recommendations:

First—In regard to that section of the report advising the issuance of a general dipping order—we believe that the time is not yet ripe for such order, but that this Board strongly recommend to all sheep men of the State of Montana the annual dipping of all sheep in the State between June 1 and November 1, being convinced that this expedient will eradicate ticks and lice, thereby improving the general health of sheep, in addition to which it is altogether probable that such universal dipping will prevent the dissemination of other infectious diseases.

We approve of the attitude of the State Veterinarian in regard to lip and leg ulceration of sheep and urgently recommend that the measures advocated by him be carried out unqualifiedly by the various sheep men of the State.

We further recommend that the State Veterinarian's suggestion relative to the study of internal parasitic diseases of sheep be followed implicitly, and that the President of the Board be hereby authorized to select some specialist for the purpose of making a thorough investigation into these parasitic diseases under the supervision of the State Veterinarian; that his findings be referred to the Board for publication from time to time as knowledge of value may be obtained.

We further advise that the following recommendation issue from the Sheep Commission regarding Gid or Turnsic among sheep, as follows: All sheep men in the State of Montana are hereby urgently advised to either burn, or bury so deeply that the carcasses may not be disinterred by predatory animals, the bodies of all sheep dying from whatsoever cause on the public range, or public highway, and that all sheep dogs in possession of sheepmen of this State be twice annually treated for tape worm in the following manner: All sheep dogs shall be confined and starved for twenty-four hours, at the termination of which time each dog shall be given from one to two drams of powdered areca nut, which must be followed in two hours with two ounces of castor oil. At the termination of twenty-four hours from the time of the administration of the castor oil, all the discharges from the dogs must be collected and burned. This treatment must be repeated twice annually. The Secretary of the Sheep Commission is hereby instructed to transmit this request to all sheepmen in Montana and give the same general publication in the papers of this State.

We further recommend that the same sanitary precautions be kept in force as those that have obtained during the past with the exception that when foreign sheep are shipped into this State from other States, Territories and Foreign Countries properly accompanied by bill of health shipped in disinfected cars, and not unloaded enroute, and are to be kept within an enclosure, surrounded by a sheep-proof fence, then if in the discretion of the State

Veterinarian it is safe to so do, such stock sheep may be permitted to go without dipping, but must in each instance be placed in quarantine and properly marked with a red "S" on the right ribs. This order not to apply to rams.

Respectfully submitted,

E. J. STANLEY.
LOUIS FEHLBERG.
JOHN M. DARROCH.

For the information of all sheepmen and to show how deep-rooted the dog tapeworm menace has become we append herewith a copy of the proclamation of the Secretary of Agriculture, Hon. James Wilson, upon this subject:

UNITED STATES DEPARTMENT OF AGRICULTURE.
BUREAU OF ANIMAL INDUSTRY.

Order Providing for the Inspection and Quarantine of Collie, Shepherd, or Sheep Dogs Imported Into the United States, or the Territories Thereof, From Any Country of the World Except North America.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
Washington, D. C., November 25, 1910.

The fact has been determined by the Secretary of Agriculture that collie, shepherd, or sheep dogs are subject to the infection of tapeworm (*Tænia cœnurus*), the infective element causing gid, sturdy, or staggers in sheep, through the invasion of the brain and spinal canal of these animals by the cystic form of this parasite (*Cœnurus cerebralis*):

Now, therefore, I, James Wilson, under authority conferred by section 2 of the act of congress approved February 2, 1903, (33 Stat., 791), do hereby order, and notice is hereby given to the owners, officers, and agents of all steamers and other vessels of all descriptions, plying between any foreign country, except the countries of North America, and the United States or the territories thereof, and to all stockmen and all other persons concerned in any way or manner in the importation of, or traffic in, collies, shepherd, or sheep dogs, that all such dogs entering the United States or the Territories thereof shall be subjected to quarantine for a period not to exceed two weeks, or until it can be determined by inspection or examination by an inspector of the Bureau of Animal Industry, as to whether such dogs are the hosts of *Tænia Cœnurus*. In the event it is found by such inspection or examination that such animals are so infected, they must be medically treated under the supervision of an inspector of the Bureau of Animal Industry and held in quarantine until it can be definitely determined that they are free from such infection

before being allowed to be imported into the United States or to mingle with sheep or other livestock in the United States.

The ports of entry for such dogs are limited to the ports designated in the regulations of this Department for the entry of animals which are subject to both inspection and quarantine, viz: On the Atlantic seaboard, Boston, Mass.; New York, N. Y.; and Baltimore, Md. On the Pacific seaboard, San Francisco and San Diego, Cal., and Port Townsend, Wash.

This order will take effect immediately and will continue in force until otherwise ordered.

JAMES WILSON,
Secretary of Agriculture.

This commission most heartily endorses the action of its committee and its recommendations upon the sanitary measures referred to and calls upon and asks the hearty co-operation of every sheepman in the State to see to it that the recommendations are heartily concurred in.

All inspectors and employees of this department will be instructed to see to it that these recommendations are acted upon, and that the quarantine notice of the Secretary of Agriculture is strictly complied with.

Among other proceedings the following resolution was unanimously agreed upon as expressing the feelings of this commission in the matter referred to:

RESOLUTION.

“Be It Resolved, by the Montana Sheep Commission in annual meeting assembled that they unqualifiedly recommend the reappointment of Dr. M. E. Knowles to the position of State Veterinarian and that we do hereby respectfully request Governor Edwin L. Norris to make such appointment, believing as we do that Dr. Knowles’ services in the past to the livestock industry of this State more than entitles him to such recognition.”

After conferring upon different matters touching upon the general sanitary conditions of the sheep industry of the State and finding no complaints before the commission, the Board empowered the President to select a committee of not more than ten (10) sheepmen of the State to represent this Board and the State of Montana at the annual convention of the National Woolgrowers’ convention to be held at Portland, Oregon, January 4-7, 1910, and there being no further business to come before the Board at this time it adjourned.

GEO. J. JOYCE, *Secretary.*

MATERIAL TO CONSTRUCT VAT.

Rough lumber—

1400 ft. 1 x 12 x 16.

14 pieces 2 x 6 x 12.

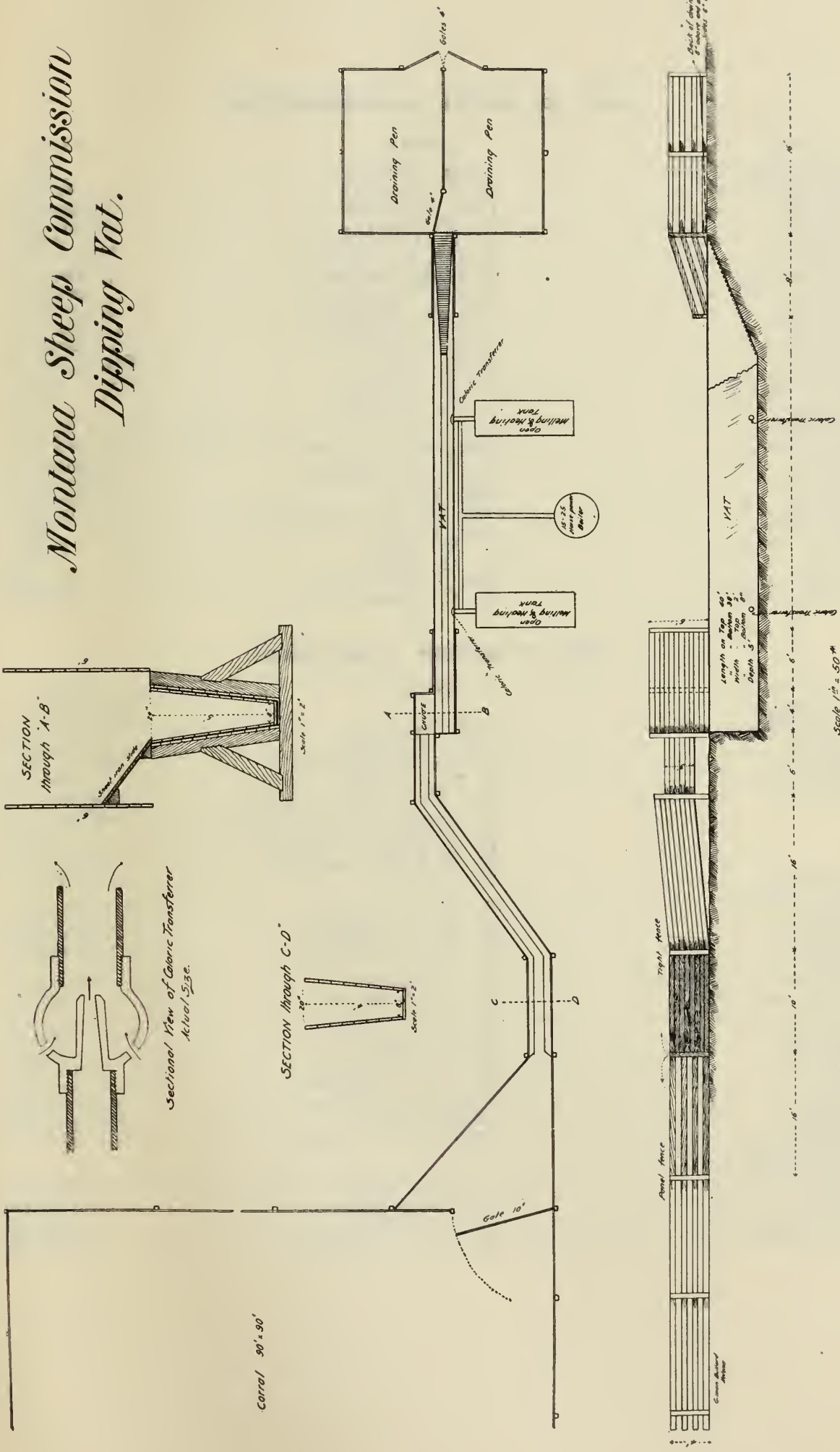
16 pieces 2 x 6 x 10.

2 rolls tar paper.

To build a plant of this kind, first dig a trench three feet wide at top and two feet at bottom and three and one-half feet deep, see that trench is level on bottom, then place ribs two feet apart, use 2 x 6 for ribs, sheet up with 1 x 12, place bottom board first, next put tar paper in, lap four inches, then put last layer of board on, this will make a vat that will last for years if it is kept full of water.

The draining pen is built the same way, by first placing sills, giving a slope of six inches from each side to center of the pen and eight inches slope toward the vat. Start in the center of draining pen to lay floor, then layer of tar paper; starting at the vat lay tar paper to the back of the pen, lap about six inches. Lay the boards lengthwise and paper crosswise, put second layer of boards, break joints in building vat and draining pen. The chute leading to the vat is built on an incline of about a foot higher than the vat and on the side of the vat. This will give you a slide into the vat from the side which is a great deal better than from the end. The slide should be faced with sheet iron. Sides of the chute about three and one-half feet high and should be solid, boarded up with flooring.

Montana Sheep Commission Dipping Vat.



LIST OF SHEEP COMMISSIONERS.

County.	Name.	Address.
Beaverhead.....	Isaac Edinger.....	Dillon
Broadwater.....	J. D. Doggett.....	Johnson
Carbon.....	John Flanagan.....	Absarokee
Cascade.....	R. F. Clary.....	Great Falls
Chouteau.....	A. S. Lohman.....	Chinook
Custer.....	Frank D. O'Neill.....	Miles City
Dawson.....	William Lindsay.....	Glendive
Deer Lodge.....	John Wagner.....	Anaconda
Fergus.....	Jos. L. Asbridge.....	Pine Grove
Flathead.....	Louis Fehlberg.....	Montford
Gallatin.....	John F. Work.....	Bozeman
Granite.....	Alex. Wight.....	Stone Station
Jefferson.....	E. J. Stanley.....	Whitehall
Lewis and Clark.....	A. K. Prescott.....	Helena
Madison.....	W. A. McAtee.....	Ennis
Meagher.....	N. B. Smith.....	White Sulphur Springs
Missoula.....	Gaspard Deschamps.....	Missoula
Park.....	J. M. Darroch.....	Livingston
Powell.....	William Williams.....	Deer Lodge
Ravalli.....	Albert May.....	Stevensville
Rosebud.....	Thomas E. Hammond.....	Forsyth
Silver Bow.....	Lee Lewis.....	Butte
Sweet Grass.....	G. M. Coffey.....	Bynum
Teton.....	L. H. Mills.....	Saco
Valley.....	Ben C. Forsythe.....	Bustead
Yellowstone.....	A. C. Logan.....	Billings

LIST OF SHEEP INSPECTORS.

County.	Name.	Address.
Beaverhead.....	Jeff Doggett.....	Twin Bridges
Broadwater.....	John Flanagan.....	Johnson
Carbon.....	Dr. L. A. Nutting.....	Absarokee
Cascade.....	A. S. Lohman.....	Great Falls
Chouteau.....	Dan H. Bowman.....	Chinook
Custer.....	Dr. A. H. Cheney, Special.....	Miles City
	R. Turbiville, Special.....	Midland
	R. A. Selway, Special.....	Alzada
	W. S. Snell, Special.....	Miles City
Dawson.....	Jos Carson.....	Glendive
Deer Lodge.....		
Fergus.....	Dr. R. A. Dennis.....	Lewistown
Flathead.....	Dr. C. F. Leslie.....	Kalispeli
Gallatin.....	Dr. Howard Welch.....	Bozeman
Granite.....		
Jefferson.....	E. J. Stanley.....	Whitehall
Lewis and Clark.....	Dr. E. D. Nash.....	Helena
Lincoln.....		
Madison.....	Samuel J. Haines.....	Twin Bridges
Meagher.....	C. W. Cook.....	Unity
Missoula.....	Dr. J. R. Ward.....	Missoula
Park.....	Dr. A. D. Knowles.....	Livingston
Powell.....	William Williams.....	Deer Lodge
Ravalli.....	Albert May.....	Stevensville
Rosebud.....	Andrew P. Tadsen.....	Forsyth
Sanders.....		
Silver Bow.....		
Sweet Grass.....	Glen M. Parker.....	Big Timber
Teton.....	J. C. McCuaig.....	Dupuyer
Valley.....	D. A. Smith.....	Hinsdale
Yellowstone.....	Dr. G. E. Thomas.....	Billings

